
Big Oil Says Recycled Fracking Wastewater
Is Safe. Texas Is About to Test It.

Fracking produces toxic wastewater filled with secret chemicals. Texas and the Trump Administration may send that treated water into rivers and on farmland.

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By Quinn Glabicki Graphics by Harry Stevens Photographs and Video by Kaylee Greenlee for The New York Times
Quinn Glabicki reported from the oil fields and arid landscape of West Texas and the Permian Basin.

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Fracking has propelled America to record oil production. But in the Permian Basin, every barrel of oil pumped to the surface is accompanied by about five barrels of toxic wastewater, and the oil industry is running out of places to put it.

To solve that problem, regulators in Texas are preparing to allow the industry to treat and release the wastewater into rivers and streams, and spray it on land and crops.

It would provide a new source of water to drought-stricken West Texas, said Charles Perry, a Republican state senator, and it would avert a disposal crisis for the oil industry. “It’s a game changer,” he said.

Treatment facilities are already built, and oil companies including Chevron and ConocoPhillips have partnered on the projects.

The state is now drafting permits that would let companies begin releasing treated wastewater into the Pecos River, which feeds the Rio Grande, Mr. Perry said. The first permits could come in weeks, he said.

The regulatory agency, the Texas Commission on Environmental Quality, said the permits are undergoing “technical review” and declined to provide a timetable.

The wastewater, also known as “produced water,” is several times saltier than seawater and laden with heavy metals, hazardous chemicals and radioactive material. Only a few states have allowed its treatment and release, including Wyoming, and parts of California, where it is used for irrigation.

In the Permian, fracking wastewater is often more contaminated, and New Mexico’s Water Quality Control Commission has banned discharges of treated wastewater, finding “insufficient evidence” that human health and the environment would be protected. Currently “there is no scenario” in which the release could be done “in a protective, predictable, and reliably safe manner,” the New Mexico commission said.

A trade association, WATR Alliance, whose board includes Chevron and ConocoPhillips, has petitioned to end New Mexico’s ban. The group said rapidly advancing science has shown the practice is safe and that it addresses water scarcity.





Salty wastewater pools in a part of the Pecos River that is often otherwise dry; the Pecos riverbed.

For decades, companies have disposed of the wastewater by pumping it back underground, where it's supposed to stay. But space underground is running out. Injected fluid has triggered earthquakes, and it is seeping up to the surface and sometimes erupting into towering geysers.

Managing the waste is of "existential importance," said Michael Lozano, vice president of government affairs for the Permian Basin Petroleum Association, which advocates on behalf of oil and gas producers.

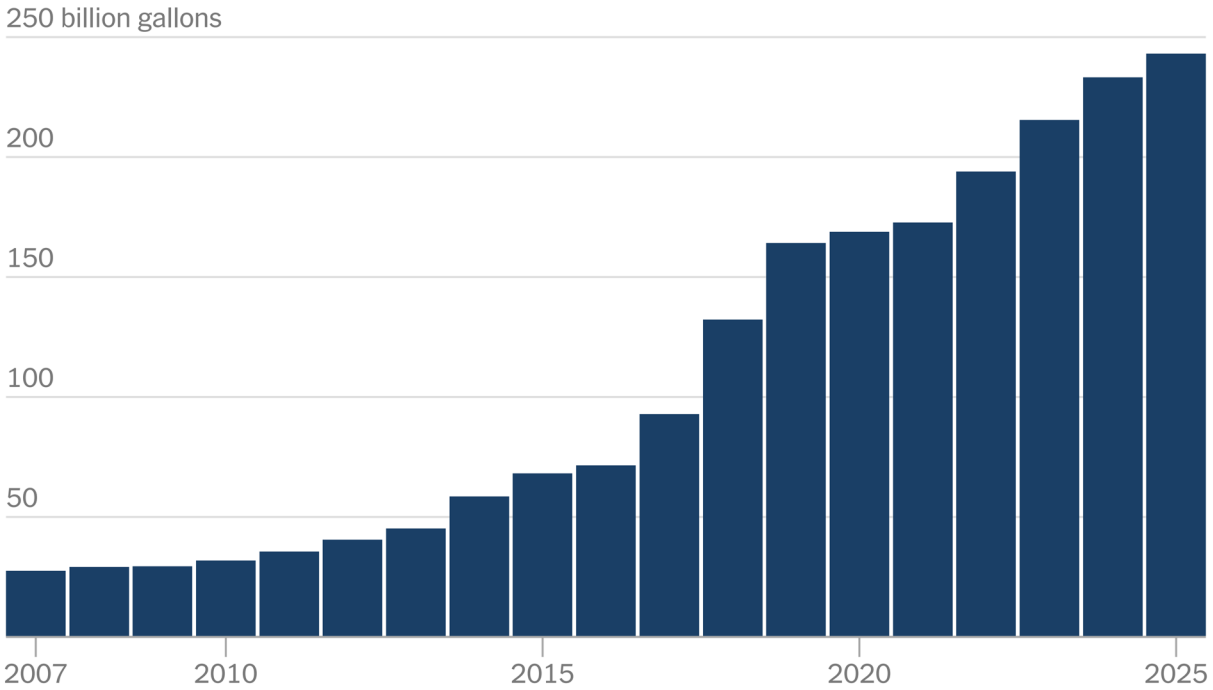
Industry groups including the American Petroleum Institute and the American Exploration and Production Council have lobbied the Trump administration to change federal rules to expand the "beneficial use" of the wastewater. The administration has taken steps to support uses including for irrigation or to discharge into rivers and streams.

"Across all relevant agencies, the Trump Administration is committed to investing in new technologies that expand the treatment and beneficial use of produced water," said Taylor Rogers, a White House spokeswoman.

The Environmental Protection Agency has said it plans to change its rules "to help unleash American energy" that could broaden where and how produced water is treated, released and used nationwide. This year the Bureau of Land Management directed staff to work with industry to look for ways to facilitate the use of treated oil field wastewater on federal lands, including for agriculture.

Wastewater injection has surged in the Texas Permian

Injection volume has increased in every year on record



Note: Data reported by disposal wells in Railroad Commission districts 7C, 08 and 8A. Source: Railroad Commission of Texas.

And this summer the Energy Department said it plans to spend $24 million to help develop treatment technologies. The agency is seeking “projects that scale to millions of barrels per day,” according to an Energy Department presentation at a Permian Basin energy conference this year.

This month, Texans elected a Democratic governor, Gina Hinojosa, who has supported tighter oil-industry regulation. She did not respond to questions about treated fracking wastewater.

Clayton Tucker, who was elected Texas’ first Democratic agriculture commissioner in 35 years, said the rules Texas recently adopted for using treated wastewater on crops “are not adequate in any way, shape or form.” In an interview, Mr. Tucker urged farmers to avoid treated wastewater “until it can be fully proven independently.”

The newly elected officials take office in January.

Some local landowners say the Texas plan amounts to a gamble.

“I like the idea of having water,” said Trey Allgood, a fourth generation farmer from Barstow who draws water from the Pecos River to irrigate Bermuda grass and winter wheat. The region, once famous for cantaloupe, has all but dried up with the river, he said, and he’d be foolish not to consider a new water source.

But, he asked, would it be safe for future generations? “There’s a lot of rush to get this stuff done,” Mr. Allgood said. “Just because we’re not a large population area doesn’t mean that we should be the guinea pigs.”

‘Gigantic ice maker’

Out of the brush near the oil-patch hamlet of Orla, Texas, a hulking new warehouse has arisen.

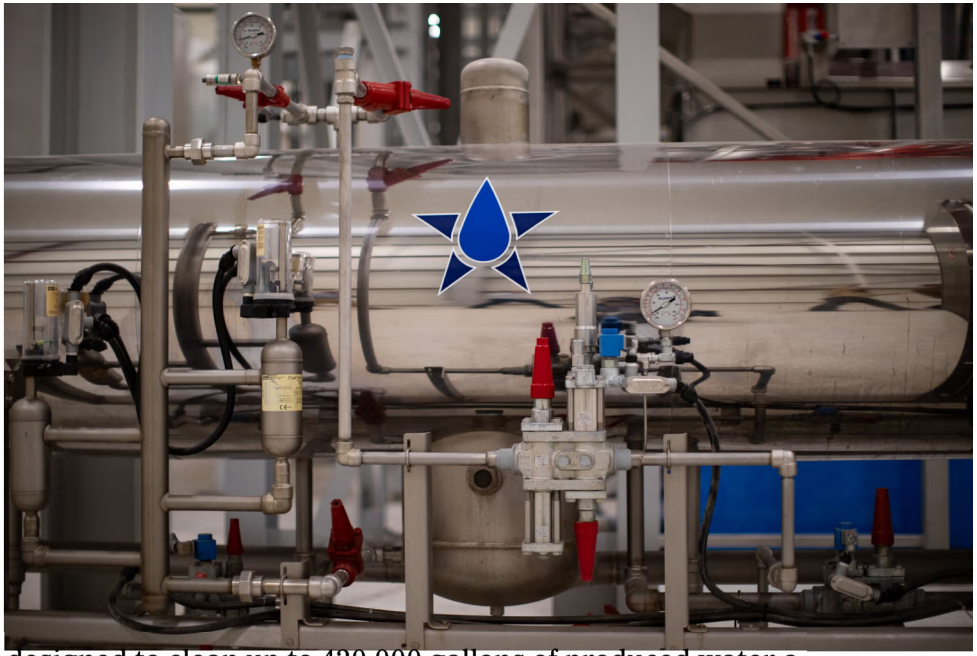
Inside, metal pipes stretch among humming pumps and valves. Tanks the size of swimming pools feed what the company, Texas Pacific Water Resources, describes as a “gigantic ice maker” that’s designed to treat up to 420,000 gallons of produced water a day.

The company says it can convert about half the volume of raw wastewater into clean water by freezing and then melting the purified ice and passing that fluid through reverse osmosis membranes and other steps. What’s left behind is a concentrated brine of salts, metals and chemicals that must still be injected underground.



The Texas Pacific Water Resources facility in Orla, Texas.





Company representatives described the plant as a “gigantic ice maker” designed to clean up to 420,000 gallons of produced water a day.

The treated water passes Texas drinking standards, the company says. Once state permits are approved, Texas Pacific plans to release treated water, slowly at first, onto nearby land and into a tributary of the Pecos River.

“There is no group involved in any of this that wants to bypass science or put any shortcuts in place,” said Robert Crain, executive vice president of Texas Pacific Water Resources.

A second test facility, about 30 minutes north, is running trials to irrigate sorghum and corn fields with treated wastewater. That plant was built by Western Midstream, a gas company, and partly funded by Chevron, the oil company has said. Western Midstream has said the project is also backed by ExxonMobil, ConocoPhillips and others.

Western Midstream wants to eventually release treated wastewater into the nearby Red Bluff Reservoir, a fishing and swimming destination that supplies seven irrigation districts downstream.

Treatment facilities would be upstream of seven irrigation districts

Companies have applied for discharge permits near the Red Bluff Reservoir



Sources: U.S. Geological Survey, U.S. Department of Agriculture, Texas Commission on Environmental Quality, Red Bluff Water Power Control District.

All told, companies are seeking permission to release more than 43 million gallons a day of treated wastewater into the Pecos River watershed. According to estimates by the Red Bluff Water Power Control District, which owns and operates the reservoir, the lake could become dominated by treated wastewater, said Brian Sledge, an attorney for the district.

If the treated wastewater is sufficiently clean, it could “substantially improve” the water quality in the drying reservoir, Mr. Sledge said. But he expressed concern that plants could malfunction or that regulations may not be protective enough. “There’s a lot of legitimate worry that this won’t be done responsibly,” he said.

A report this year by the Texas Produced Water Consortium, a group of academics, industry scientists and others, said pilot treatment systems removed more than 99 percent of the salts, organic chemicals and radioactivity from the wastewater. Researchers used treated wastewater to grow alfalfa and concluded that it had potential as an irrigation source. The authors of the study also said that multiyear research is necessary to assess the cumulative effects on soil, plants and feed safety over time.

Critics say too much remains unknown.

Dried salt from produced water in the riverbed of the Pecos near Grandfalls, Texas.





Mud in the Pecos River; mineral buildup on the banks of Lake Boehmer in Imperial, Texas.

Texas regulators said this year that they were uncertain about what's in fracking wastewater. "We flat don't exactly know," said Brooke Paup, chairwoman of the Texas Commission on Environmental Quality, at an industry conference in April, according to a recording made by a representative of Fieldnotes, an environmental watchdog group.

Some fracking chemicals are considered by energy companies to be trade secrets. "Y'all won't tell us what's in it," Ms. Paup said, according to the recording.

TCEQ declined to comment on Ms. Paup's statements.

Adrianne Lopez, who leads research at Texas Pacific Water Resources, said the company uses data on reported fracking compounds, plus geologic information, "to build treatment technologies that are appropriate for the characteristics of water in the region." Chad Unrau, vice president at Western Midstream, said the company has tested for more than 700 compounds and screened "beyond those included in routine testing."

The EPA has also cited concerns in the past. A report that was published on the agency's website last year, and then taken down, said wastewater can contain "an unpredictable and complex mixture" of chemicals and other compounds "for which no water quality standards and analytical methods exist."

In Pennsylvania, the agency said, streambed sediment and freshwater mussels downstream from treatment facilities had "significantly greater" levels of radium and other contaminants that "likely were sourced from produced water."

The report also said that "with appropriate treatment and risk management strategies, produced water can potentially be used to augment conventional water supplies."

An EPA spokesman, Jacob Murphy, said the study was not final and does not reflect "rapid advancements" in treatment technologies.

Pressure to proceed

Attendees of a Waters of West Texas seminar last month, where plans to release the treated water into the Pecos were discussed.

In Texas, politicians and industry groups want regulators to issue permits to release treated wastewater as quickly as possible.

“If the oil and gas industry cannot figure out a way to treat the produced-water problem in this state, we will have no oil and gas industry,” said Drew Darby, a state representative and the chairman of the Texas House Committee on Energy Resources, during a public hearing in September. Mr. Darby added that he safely drank treated wastewater himself.

Mr. Darby wrote legislation, enacted last year, that shields energy and treatment companies from liability if exposure to treated wastewater causes property damage, injury or death, provided the companies follow rules that the state sets.

This month, Texas regulators finalized rules for spreading treated wastewater on farmland. Those rules do not require testing for radioactive material, PFAS “forever chemicals” or heavy metals, which can be found in the raw wastewater.

More than a dozen groups criticized the rules as insufficient. In a response, the agency said it believed the standards would adequately protect human health and the environment, and that additional requirements could be made on a “case by case basis.”

Last month in West Texas, Schuyler Wight, a rancher, stood beside the Pecos River inspecting a brownish fluid that had seeped into the dry, winding riverbed. So much salt had accumulated along the riverbanks that it could be mistaken for snow. It was fracking wastewater that had bubbled up from underground, he said.

Treating and releasing the wastewater, instead of pumping it back underground, might now be the only viable fix, Mr. Wight said. “We can’t keep doing what we’re doing,” he said.

Schuyler Wight at an old well that is releasing produced water nearby.

Maxine Joselow in Washington contributed reporting.

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